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# Simple economic tools for subsistence farmers in the Lao Peoples Democratic Republic – or how to measure the impact of extension

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## 1. Introduction

### The country

Vietnam in the East, China in the North, Cambodia in the South, Thailand and Myanmar in the West surround the Lao People's Democratic Republic (PDR). The country is composed of 16 provinces, subdivided in 141 districts, and more than 10 000 villages, for a total population of slightly over 5 million, essentially rural. The total land area of the Lao PDR is 236 800 km<sup>2</sup>, but less than 5 % is cultivated (Figure 1). The average household size in rural areas is 6.1 persons.

Laos is a multi-ethnic state with a territory off-centre from the Mekong. The dominant ethnic group, the Lao, followed the Mekong and settled in the valleys of the river and its tributaries. There they practiced wet rice cultivation, pushing the indigenous people towards the slopes. The main ethnic groups are called the Lao Loum (Lao of the lowlands) and the Lao Theung (Lao of the slopes). The nation's history explains why Laos, the most mountainous country in the peninsula, is the most ethnically diverse (up to 68 different ethnic groups).

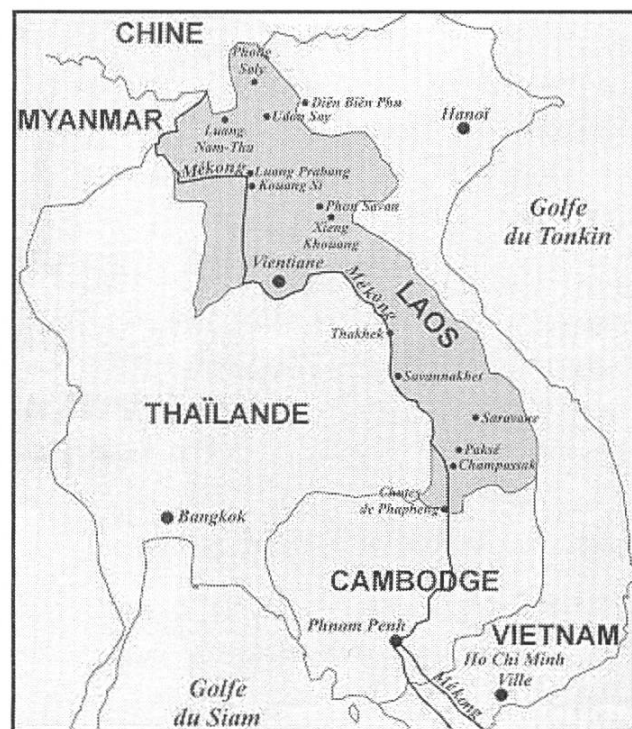


Figure 1: Map of the Lao PDR.

## **Swiss cooperation in the Lao PDR**

The largest Swiss funded project presently implemented in the Lao PDR is the Laos Extension for Agriculture Project (LEAP)<sup>1</sup>. The Swiss Agency for Development and Cooperation (SDC) is the funding agency, while Helvetas<sup>2</sup> is the implementing agency. The project aim is “to support the development of a decentralised, participatory, pluralistic and sustainable agricultural extension system that reaches male and female farmers equally”. In 2002 and 2003, the author had the opportunity to visit the project with the mission to explore opportunities and potentials regarding a participation of farmers to the costs of extension. In 2004, a student of the Swiss College of Agriculture<sup>3</sup> spent his 6-month practical term in the Lao PDR with the task to elaborate and test a set of simple tools for economic analysis of farm activities on behalf of LEAP.

## **2. Farming systems in the Lao PDR**

Agriculture is a key sector of the Lao economy. It contributes around 50 % to the GDP, and about 80 % of the population is employed in the primary sector. There are approximately 700'000 agricultural households in the country, with an average farm size of 1.62 ha, operated under “owner-like” tenure.

### **Crops**

The main crop is rice, with a majority of wet season lowland rice (65 %), upland rice (27 %), and dry season rice (8 %). The most important rice growing areas are located in the South, in the Provinces of Savannakhet and Champassak. Upland rice is predominantly grown in the North. Dry season rice cropping increased in the past few years following heavy investments in irrigation. Over 90 % of the rice grown in the Lao PDR is glutinous rice (“sticky rice”).

Other crops grown in the Lao PDR are maize, beans, soybeans, root crops, vegetables (cucumber, chilli, cabbage, eggplant, onion, etc.), sesame, cotton, sugar cane, coffee, tobacco, groundnuts, and fruits

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<sup>1</sup> LEAP phase 1, 2001-2004, phase 2, 2004-2006.

<sup>2</sup> Helvetas is a Swiss organisation for international cooperation (NGO).

<sup>3</sup> Stefan Schürmann, 2004.

such as banana, pineapple, mango, durian, jackfruit, papaya, oranges, etc.

### **Livestock**

Buffaloes, cattle, pigs and poultry are very common in the Lao PDR. Fishing is also an important activity for many households: in the form of aquaculture, river or lake fishing.

### **Farm economy**

Generally, the use of mineral fertilisers is very limited and the level of mechanization is extremely modest. Agricultural production in the Lao PDR is mainly oriented towards self-sufficiency at household level, and the marketed share of production is usually below 30 %. Surplus production is usually sold on local markets, with a few exceptions such as coffee.

A typical farm household produces rice as a main crop (mainly for own consumption), and raises some small livestock (chickens and pigs) essentially for the market. Therefore, investments in rice production are usually paid with cash earned from livestock activities.

### **Potentials for Laos' agricultural products**

The limited domestic market (due to the high degree of self-sufficiency of farm households and the limited urban population) obliges Lao farmers to explore markets outside the national borders for their surplus production. However, despite their high potential, the markets within the sub-region are not easily accessible for Lao products. Various trade barriers, but also aspects such as production costs, quality, reliability in supply (quantity and timeliness), etc. play an important role on these highly competitive markets. Under these circumstances, quality products and specialties (niche products) will have a better chance on the market than mainstream products (such as white rice).

## **3. Simple economic tools for Lao farmers**

As it came out in the preliminary missions dealing with the “farmers’ willingness to pay for extension activities”, farmers are ready to contribute in cash or in kind (though in a modest proportion) for advice and support related to productive activities, especially those with a quick

return. The contribution is meant for the village extension worker (VEW) but he (or she) would only get it if the activity was successful. Farmers (in the South as well as in the North) selected three topics as high priority areas for extension: improvement in rice, chicken and pig production. Therefore the extension project – in a needs oriented approach and in a first step – concentrated its activities on these three products. It quickly became obvious that a set of simple economic tools was needed at the farm level, on the one hand to help farmers to improve their production and on the other hand to measure the impact of extension activities. Economic tools were also needed as a means to compare farmers' traditional practices with improved technologies, and to situate individual farmers within their production groups.

### **Tool selection for subsistence farmers**

Most available economic tools at farm level, e.g. those based on gross margin calculations, seemed inappropriate because of the very low market integration of most farmers and the large share of self-consumption. Giving a (theoretical) market value to the self-consumed production is likely to give a distorted picture of the reality. Cash flow based methods on the other hand reflect only the monetised part of farm activities, leaving aside the value of the production that is consumed by the households<sup>4</sup>.

These are the reasons why the selected approach is based on a “two-pronged calculation”, showing on the one hand the monetary part of the production – with the cash flow as a result – and the in kind production on the other hand, with a calculated market value.

In figure 2, the example of rice production is taken to illustrate the tool. The general information about the farm (part 1 of the form) specifies whether it is irrigated rice, rainfed rice or upland rice, and it includes the crop area and yield. The second part deals with inputs. If own inputs are used (e.g. rice seed) the market value of the seed is entered in the column “value (kip)<sup>5</sup>”, if seeds are bought from the market or from other

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<sup>4</sup> With the cash-flow method, rice production in Laos (especially rainfed and upland rice) shows in most cases negative results because rice is mostly used for home consumption. Rice production involves cash expenses but generates almost no cash revenue.

<sup>5</sup> Kip = national currency of the Lao PDR (1 US dollar = 7613 kip exchange rate in February 2005).

**RICE SUCCESS CALCULATION**

**1. General**    Irrigated Rice ☐    Rainfed Rice ☐    Upland Rice ☐

Name of Farmer:     Village:

Date of Calculation:     District:     Total Yield (kg):

Time Period (1 Season: From / To):     Province:     Total Area (ha):

**a**

**2. Input**

2.1 Means		Quantity	Value (kip)	Cash (kip)
Seed (Kg)				
Organic Fertilizer (Kg)				
Chemical Fertilizer (Kg)				
Pesticide (Litre)				
Water (L)				
Electricity				
Gasoline				
Buffalo Rental				
Hand-Tractor Rental				

2.2 Labour (Person-Days)		Family	Hired	Total	Value (kip)	Cash (kip)
Seedbed Preparation						
Soil Preparation						
Transplanting						
Taking Care						
Harvesting						
Threshing						
Total Transporting						
<b>Total Labour-Days</b>						
<b>Total Input in Cash</b>						
<b>Value of Non-Cash Input</b>						

**b**    **c**    **d**

**3. Output**

3.1 Output in Cash	Quantity (kg)	Kip
Total Sold / Exchanged Rice		

**e**

3.2 Output Not in Cash	Quantity (kg)	Kip
Rice for own Consumption		
Rice for Friends and Relatives		
Rice Lost		
Rice Remaining		
<b>Value of Non-Cash Output</b>		

**f**

**4. Calculation**

	Value (kip)	Kip
Total Input in Cash	b	
Value of Non-Cash Input	c	
<b>4.1 Total Input</b>	b + c	
Total Output in Cash	e	
Value of Non-Cash Output	f	
<b>4.2 Total Output</b>	e + f	
Total Output	h	
Total Input	g	
<b>4.3 Total Profit</b>	h - g	
Total Output in Cash	e	
Total Input in Cash	b	
<b>4.4 Cash Balance</b>	e - b	
Total Profit	i	
Total Area (ha)	a	
<b>4.5 Profit / ha</b>	i / a	
Total Profit	i	
Total Labour-Days	d	
<b>4.6 Profit / Labour-Day</b>	i / d	

**g**    **h**    **i**    **j**

Figure 2: Simple economic tool for subsistence farmers in the Lao PDR.

sources, the amount is entered in the column “cash (kip)”. When it comes to labour, family own labour is recorded separately from hired labour for the various activities in rice production. No cash value is calculated for own labour; only hired labour is valued in cash or in kind,



depending on the mode of payment. The result that is calculated in this section is the “total cash expenses for inputs” on the one hand (what the farmer actually paid with cash = b) and the “value of non-monetised inputs” on the other hand (c). The total labour input is indicated under letter d.

Section 3 is about outputs of rice production. If a part of the production is sold, the corresponding amount is indicated under letter e (quantity sold x market price). The quantity that is used for own consumption or for seeds is entered in box 3.2, and a value is calculated for the corresponding quantity (at market price = f).

The last section includes the various calculated results of the production:

- **Total “profit”** (letter i) is the result of the total outputs (cash and non-cash) minus the total inputs (cash and non-cash). As a matter of fact, this is more an income than a profit statement, because it includes the farmers’ own labour.
- **Cash balance** (letter j) is the result of cash output minus cash input. This is the cash flow statement. For farmers in the Lao PDR, the cash flow is of critical importance: the money (cash) that remains in the pocket at the end of the activity will to a large extent determine further investments.

With this calculation, changes on the farm such as increased cash revenue or improved food security (more rice available for own consumption) are made visible if the tool is used e.g. before and after technical advisory services were delivered to the farmers, or during two successive years.

By applying this method in a systematic way, the extension system can draw very useful lessons about its activities. The tool provides the basis for farm-to-farm comparisons, but also for comparisons between districts, provinces and even at the national level, as indicated in Figure 3.

Similar tools were also developed for chicken and pig production, and more tools will be developed for other crop and livestock products.

## 4. Conclusion

A number of difficulties are expected regarding the application of the economic tools developed through this project. First, the Lao extension staffs, at all levels, have only limited economic knowledge and this kind of analyses is completely new to them. For them, the challenge will be to understand the crucial importance of economic considerations in connection with technical extension packages. Second, subsistence farmers in the Lao PDR are not used to keeping records, and the illiteracy rate among them remains high.

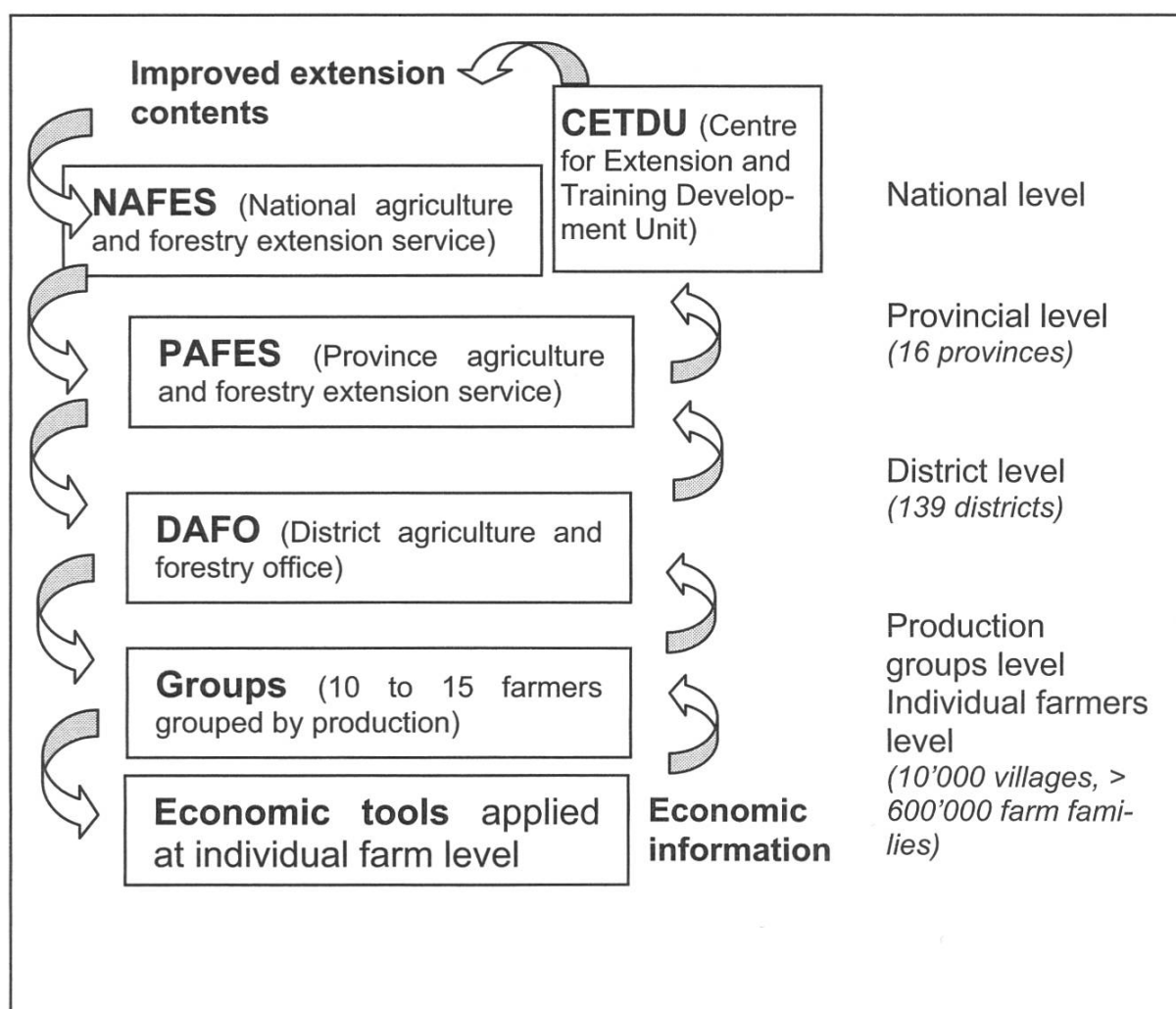


Figure 3: Application of economic tools in the Lao PDR.

Nevertheless, the performance and the impact of the extension system will depend to a large extent on the careful application of those tools, on a limited number of farmers at the beginning, in order to identify and



improve the contents of extension packages “that work”<sup>6</sup>. Later, those tools may be applied as a standard for all farmers that are interested to improve their production and their livelihood.

It is well known that extension services need to prove their efficiency and their effectiveness as their funding remains a critical issue, especially in countries where resources are scarce as it is the case in the Lao PDR. Simple economic tools, if adequately applied, will help farmers to get a better understanding of their own situation – and contribute to improved livelihood – and at the same time they will serve the purpose of extension services: their contribution to economic growth in the primary sector and to improved food security in rural areas will be demonstrated.

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<sup>6</sup> Promising extension packages with the highest “return on investment” for poor farmers.

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